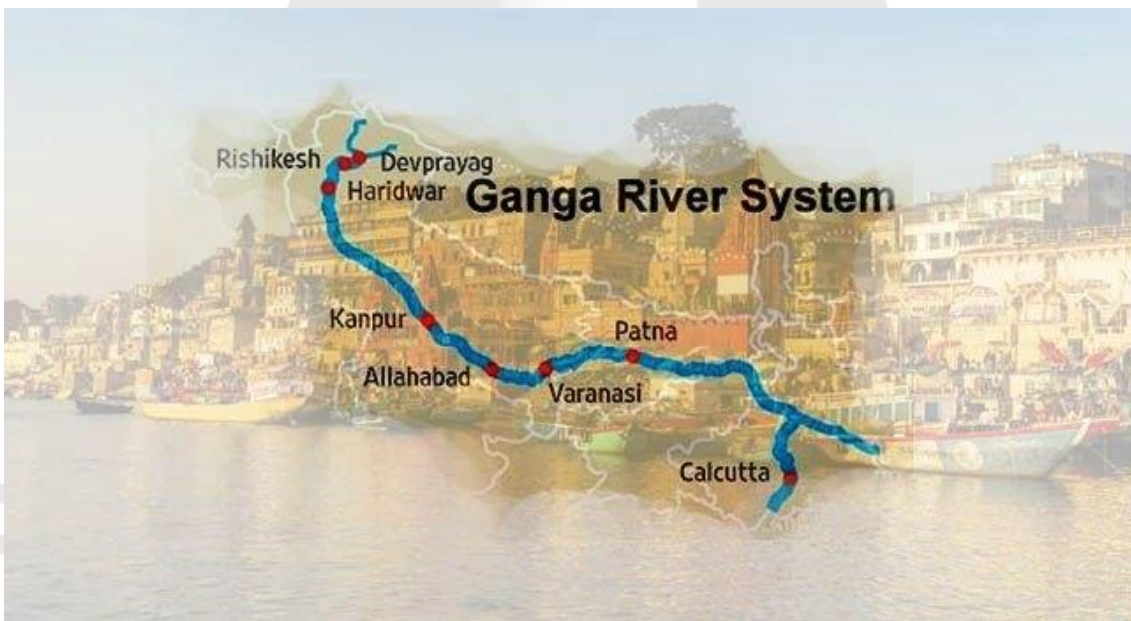


Ganga River System





Place	Confluence
Devprayag	Bhagirathi + Alaknanda
Rudraprayag	Mandakini + Alaknanda
Karnaprayag	Pindar + Alaknanda
Vishnuprayag	Dhauliganga + Alaknanda

- The Bhagirathi, considered to be the source stream: rises at the foot of Gangotri Glacier, at Gaumukh, at an elevation of 3892m and fanning out into the 350km wide Ganga delta, it finally empties into the Bay of Bengal.
- **From Devapryag the river is called as Ganga.**
- Yamuna is the western most and the longest tributary of the Ganga and has its source in the Yamunotri glacier.
- Ganga flows into the Bay of Bengal near the Sagar Island.

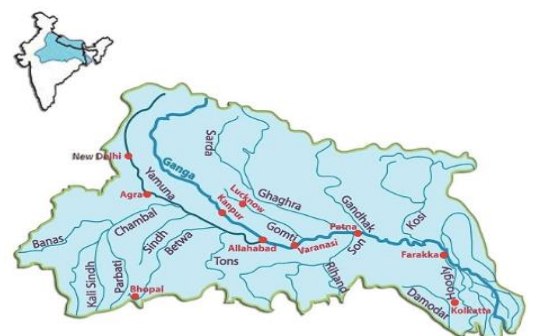
Major tributaries of Alaknanda

- **East Trisul** (joins Alaknanda at Karan Prayag)
 - **Pindar** (rises from Nanda Devi)
 - **Mandakini or Kali Ganga** (joins Alaknanda at Rudra Prayag)
 - **Dhauliganga**
 - **Bishenganga.**
- [Kishenganga is the tributary of Jhelum]

Major tributaries of Bhagirathi

- **Bheling**

- The Ganga is the national river and also the largest river system in India.
- It is a transboundary river that flows through India and Bangladesh.
- Length – approx. 2525 km.
- The Ganga river basin covers about 8.6 lakh sq.km in India. It runs through Uttarakhand (110 km), Uttar Pradesh (1450 km), Bihar (445 km) and West Bengal (520 km).



- Near Rajmahal Hills it turns to the south-east.
- At Farraka, it bifurcates into Bhagirathi-Hugli in West Bengal and Padma-Meghna in Bangladesh (it ceases to be known as the Ganga after Farraka).
- The total length of the Ganga river from its source to its mouth (measured along the Hugli) is 2,525 km.
- Haridwar, Kanpur, Kannauj, Allahabad, Varanasi, Patna, Ghazipur, Bhagalpur, Mirzapur, Ballia, Buxar, and Chunar are the important towns.

Cities Based on River Ganga

- Allahabad (Confluence of Ganga, Yamuna and Saraswati)
- Bhagalpur
- Buxar
- Haridwar
- Patna
- Varanasi
- Kanpur



ALAKNANDA

- It is one of the headstreams of the Ganga.
- It rises at the confluence and feet of the Satopanth and Bhagirath glaciers in Uttarkhand.
- It meets the Bhagirathi River at Devprayag after which it is called as the Ganga.
- The Alaknanda system drains parts of Chamoli, Tehri, and Pauri districts
- The Hindu pilgrimage center of Badrinath and the natural spring Tapt Kund lie along the banks of the Alaknanda River

BHAGIRATHI

- It is one of the two most important headstreams of the Ganga which meets the Alaknanda at Devprayag to form the Ganga
- It rises at the foot of Gangotri Glacier, at Gaumukh, at an elevation of 3892m at the base of Chaukhamba peak in the Uttarkashi district of Uttarakhand
- Gangotri, Uttarkashi, and Tehri are important settlements along the river.



Major Tributaries of the Ganga River

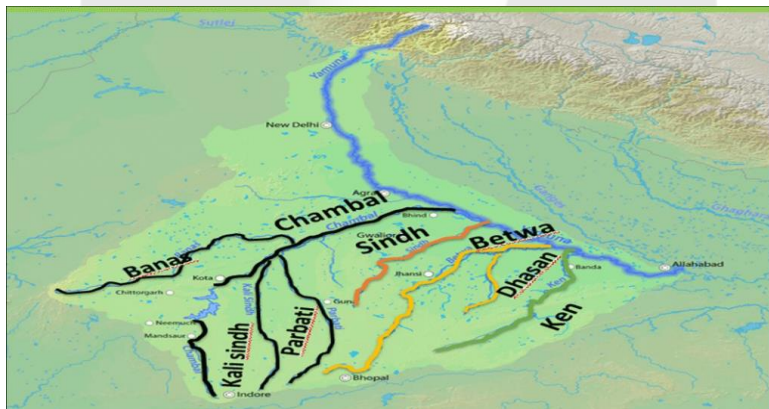
Right Bank Tributaries of the Ganga River

Yamuna River
Chambal River
Banas River
Sind River
Betwa River
Ken River
Son River
Damodar River

Left Bank Tributaries of the Ganga River

Ramganga River
Gomti River
Ghaghra River
Kali River
Gandak River
Burhi Gandak
Kosi River

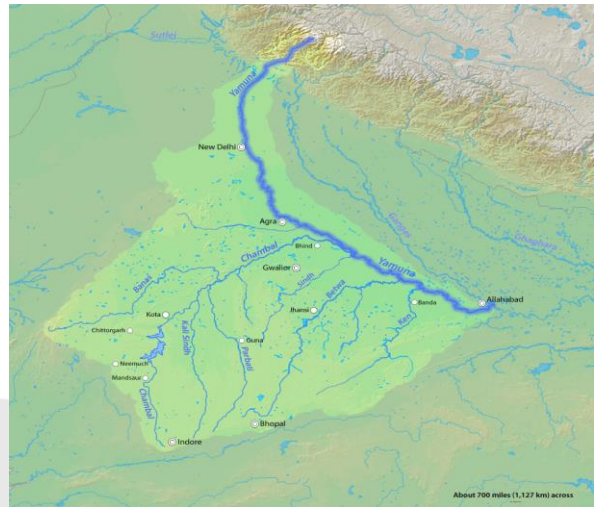
Yamuna River System



- It originates from the Yamunotri Glacier on the southwestern slopes or Banderpoonch peak in the Mussoorie range of the lower Himalayas.
- Flows along states of Uttarakhand, Himachal Pradesh, Haryana enters Delhi and merges with the Ganga near Triveni Sangam, Allahabad(Prayagraj).
- The largest tributary of the Ganga in the northern plains.
- It creates the highly fertile alluvial, Yamuna-Ganges Doab region between itself and the Ganges in the Indo-Gangetic plain.
- The cities of Bhagpat, Delhi, Noida, Mathura, Agra, Firozabad, Etawah, Hamirpur, and Allahabad lie on its banks

Major Tributaries of Yamuna River

- Tons
- Giri
- Hindon
- Chambal
 - Banas
 - Kali Sindh
 - Parbati
- Sind
- Betwa
 - Dashan
- Ken



Chambal River

- Chambal River is also known as Charmanwati or Charmawati
- The 960km long Chambal river originates from Janapao Hills of the Vindhya range.
- 15km West-South-West of Mhow in Indore district in Madhya Pradesh.
- Utilized for hydropower generation at Gandhi Sagar dam, Rana Pratap Sagar dam, Jawahar Sagar Dam and the Kota Barrage.
- The river flows much below its banks due to severe erosion because of poor rainfall and numerous deep ravines have been formed in the Chambal Valley, giving rise to badland topography. {Arid Landforms}

Dams on the Chambal

- The Gandhi Sagar dam is the first of the four dams built on the Chambal River, located on the Rajasthan-Madhya Pradesh border.
- The Rana Pratap Sagar dam is a dam located 52 km downstream of Gandhi Sagar dam on across the Chambal River in Chittorgarh district in Rajasthan.
- The Jawahar Sagar Dam is the third dam in the series of Chambal Valley Projects, located 29 km upstream of Kota city and 26 km downstream of Rana Pratap Sagar dam.
- The Kota Barrage is the fourth in the series of Chambal Valley Projects, located about 0.8 km upstream of Kota City in Rajasthan.
- Water released after power generation at Gandhi Sagar dam, Rana Pratap Sagar dam and Jawahar Sagar Dams, is diverted by Kota Barrage for irrigation in Rajasthan and in Madhya Pradesh through canals.
- Keoladeo National Park is supplied with water from Chambal river irrigation project.

Betwa

- Also called as Vetravati
- Vindhya Range (Raisen) just north of Narmadapuram in Madhya Pradesh
- The confluence of the Betwa and the Yamuna Rivers takes place in the Hamirpur town in Uttar Pradesh.
- Dhasan is the main tributary.
- Rajghat Dam located on the river.

Ken River

- The Ken River originates near the village Ahirgawan on the north-west slopes of Barner Range in Katni district
- Merge with the Yamuna near Fatehpur in UP.
- The Ken valley separates the Rewa Plateau from the Satna Plateau.
- The Ken River passes through Panna National Park.

The Ken-Betwa River Linking Project



Son River

- The Son River rises in the Amarkantak Plateau.
- Its source is close to the origin of the Narmada.
- It passes along the Kaimur Range.
- It joins the Ganga near Danapur in Patna district of Bihar.
- It flows for a distance of 784 km from its source.
- The important tributaries of the Son are the Johilla, the Gopat, the Rihand, the Kanhar and the North Koel. Almost all the tributaries join it on its right bank.



Damodar river

- The Damodar river rises in the hills of the Chotanagpur plateau and flows through a rift valley.
- Rich in mineral resources, the valley is home to large-scale mining and industrial activity.
- It has a number of tributaries and subtributaries, such as Barakar, Konar, Bokaro, Haharo, etc.
- The Barakar is the most important tributary of the Damodar.
- The valley is called “the Ruhr of India”.
- The first dam was built across the Barakar River, a tributary of the Damodar river.
- It used to cause devastating floods as a result of which it earned the name ‘Sorrow of Bengal’. Now the river is tamed by constructing numerous dams.
- It joins the Hugli River 48 km below Kolkata.
- The total length of the river is 541 km.

Ghaghra River

- Its source is near Gurla Mandhata peak, south of Manasarovar in Tibet (river of the trans-Himalayan origin).
- It is known as the Karnaili in Western Nepal.
- Its important tributaries are the Sarda, the Sarju (Ayodhya is located on its bank) and the Rapti.
- The Ghaghara joins the Ganga a few kilometres downstream of Chhapra in Bihar.
- After reaching the plain area, its stream gets divided into many branches of which, Koriyab and Garwa are important.
- The river bed is sandy and sudden bends start occurring in the stream.
- The river has a high flood frequency and has shifted its course several times.

Kali River

- Rises in the high glaciers of trans-Himalaya.
- It forms the boundary between Nepal and Kumaon.
- It is known as the Sarda after it reaches the plains near Tanakpur.

Gandak River

- Originates near the Tibet-Nepal border at a height of 7,620 m
- It receives a large number of tributaries in Nepal Himalaya.
- Its important tributaries are the Kali Gandak, the Mayangadi, the Bari and the Trishuli.
- It flows into Ganga at Hajipur in Bihar.

Kosi River

- The Kosi river consists of seven streams namely Sut Kosi, Tamba Kosi, Talkha, Doodh Kosi, Botia Kosi, Arun and Tamber
- The sources of seven streams of the Kosi are located in snow covered areas which also receive heavy rainfall. Consequently, huge volume of water flows with tremendous speed.
- Seven streams mingle with each other to form three streams named the Tumar, Arun and Sun Kosi.
- They unite at Triveni north of the Mahabharata Range to form the Kosi.
- The river enters the Tarai of Nepal after cutting a narrow gorge in the Mahabharata Range. The joins the Ganga.
- The river channel is braided and it shifts its course frequently. Thus the river is often termed as the 'Sorrow of Bihar'.
- In order to tame this river, a barrage was constructed in 1965 near Hanuman Nagar in Nepal.

River	Source
Bhagirathi (Ganga)	Gangotri glacier
Yamuna	Yamnotri glacier on the Bandarpunch Peak
Chambal	Janapao Hills in the Vindhya Range
Banas	Aravali Range
Betwa	Vindhya Range (Raisen) just north of Narmadapuram in Madhya Pradesh
Ken	Barner Range
Son	Amarkantak Plateau
Damodar ('Sorrow of Bengal')	Chotanagpur plateau
Ramganga River	Garhwal district of Uttarakhand
Ghaghra River	Gurla Mandhata peak, south of Manasarovar in Tibet (river of the trans-Himalayan origin)
Gandak River	Tibet-Nepal border
Burhi Gandak	Sumesar hills near the India-Nepal border
Kosi ('Sorrow of Bihar')	Tumar, Arun and Sun Kosi unite at Triveni north of the Mahabharata Range to form the Kosi.
The Kali River (border between Nepal and Uttarakhand)	Glaciers of trans-Himalayas

- The Ganga initially flows in the southern direction, then in the south-east direction up to Mirzapur and then in the east direction in the Bihar plains.
- The Ganga flows eastwards to Farakka in West Bengal. At Farakka, its distributary, Bhagirathi-Hooghly flows southwards through deltaic plains to the Bay of Bengal near Sagar Island.
- After entering Bangladesh, the main branch of the Ganga is known as the Padma which meets Jamuna river (largest distributary of the Brahmaputra river). Padma river meets Meghna (second largest distributary of Brahmaputra) and hereafter, it is known as Meghna river and enters into the Bay of Bengal.
- The delta formed with waters from the Ganga and the Brahmaputra rivers is known as the Sundarban Delta. It is the world's largest and fastest-growing delta. It is also the home of the Royal Bengal tiger.

Namami Gange Yojana

- Namami Gange Project or Namami Ganga Yojana is an ambitious Union Government Project which integrates the efforts to clean and protect the Ganga river in a comprehensive manner.
- In its maiden budget, the government announced Rs. 2037 Crore towards this mission.
- The project is officially known as the Integrated Ganga Conservation Mission project or 'Namami Ganga Yojana'.
- It is being operated under the Department of Water Resources, River Development, and Ganga Rejuvenation, Ministry of Jal Shakti.
- It has an Rs. 20,000-crore, centrally-funded, non-lapsable corpus and consists of nearly 288 projects.
- Will cover 8 states, 47 towns & 12 rivers under the project.

- Over 1,632-gram panchayats on the banks of Ganga to be made open defecation-free by 2022.
- The program is being implemented by the National Mission for Clean Ganga (NMCG), and its state counterpart organizations i.e., State Program Management Groups (SPMGs).
- NMCG is the implementation wing of National Ganga Council (set in 2016; which replaced the National Ganga River Basin Authority (NRGBA)).
- Expansion of coverage of sewerage infrastructure in 118 urban habitations on banks of Ganga.

Other Initiatives Taken

- Ganga Action Plan: It was the first River Action Plan that was taken up by the Ministry of Environment, Forest and Climate Change in 1985, to improve the water quality by the interception, diversion, and treatment of domestic sewage.
- National River Ganga Basin Authority (NRGBA): It was formed by the Government of India in the year 2009 under Section-3 of the Environment Protection Act, 1986.
- It declared the Ganga as the 'National River' of India.(2008)

- Clean Ganga Fund: In 2014, it was formed for cleaning up of the Ganga, setting up of waste treatment plants, and conservation of biotic diversity of the river.
- Bhuvan-Ganga Web App: It ensures the involvement of the public in the monitoring of pollution entering into the river Ganga.
- Ban on Waste Disposal: In 2017, the National Green Tribunal banned the disposal of any waste in the Ganga.

MCQ

Place

- a. Devprayag
- b. Rudraprayag
- c. Karnaprayag
- d. Vishnuprayag

Confluence

- 1. Bhagirathi + Alaknanda
- 2. Mandakini + Alaknanda
- 3. Pindar + Alaknanda
- 4. Dhauliganga + Alaknanda

Code:

- | | a | b | c | d |
|----|---|---|---|---|
| A. | 1 | 2 | 3 | 4 |
| B. | 4 | 3 | 2 | 1 |
| C. | 3 | 4 | 1 | 2 |
| D. | 1 | 4 | 3 | 2 |

Which of the following Ganga tributary originates from the Amarkantak Plateau?

- A. Kali or Sarda
- B. Son
- C. Yamuna
- D. Gandak

Govind Ballabh Pant Sagar is located on which river?

- A. Yamuna
- B. Son
- C. Rihand
- D. Tapti

India's highest dam Tehri is located on which river?

- A. Bhagirathi
- B. Alaknanda
- C. Ganga
- D. Sutlej

Which of the following tributary of Ganga originates from Nepal-Sikkim border and joins Ganga in Bangladesh?

- A. Mahananda River
- B. Kosi River
- C. Gandak River
- D. Gomti

Question	Answer
1	a
2	b
3	c
4	a
5	a